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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/480,173	01/10/2000	Risto Aalto	PM 258574	3987

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1600 TYSONS BOULEVARD
MCLEAN, VA 22102

EXAMINER

NGUYEN, LEE

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 04/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/480,173

Applicant(s)

AALTO, RISTO

Examiner

LEE NGUYEN

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 08/849,711.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 08/849,711, filed on 06/12/1997.

Information Disclosure Statement

2. The IDS filed 1/10/2000 has been considered and recorded in the file.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,091,955. Although the conflicting claims are not identical, they are not patentably distinct from each other because after carefully considers the claims, claims 1-13 of Patent'955 encompass the limitations of claims 1-15 of the present application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. (EP 0531090) in view of Royer (U.S. 5,506,869).

Regarding claim 1, Fujii teaches a cellular network including allocated radio frequencies reused in cells (fig. 16C), comprising: said allocated radio frequencies (channels 1out, 2out, 3out and channels 1in, see fig. 16C) being divided into regular radio frequencies for which lower frequency

reuse is utilized to achieve a seamless overall coverage (regular channels 1out, 2out, 3out are reused or repeated at a distance of three first small cells which are macrocells used to achieve seamless overall coverage, see fig. 16C), and super-reuse frequencies to which high frequency reuse is applied to provide a high traffic carrying capacity (super-reuse channels 1in are reused or repeated at a distant of one first small cell, i.e., repeat more often than the regular channels, (fig. 16C) which is high traffic carrying capacity than the regular channels, col. 8, lines 12-15); at least some of said cells (first small cell, fig. 16C) having both at least one regular frequency 1out (fig. 16C) and at least one super-reuse frequency 1in (fig. 16C), so that at least one regular frequency 1out is intended to serve primarily in cell boundary regions (see first small cell in fig. 16C) and said at least one super-reuse frequency 1in is intended to serve primarily in the vicinity of a base station (see third small cell in fig. 16C). Fujii also teaches a controller which controls traffic load distribution in a cell between said at least one regular and said at least one super-reuse frequency by intra-cell handover (handover between a first small cell and a second smaller cell, col. 7, lines 7-24). The intra-cell handover in Fujii is induced by signal quality measurement (received levels, col. 7, lines 7-24). Fujii differs from

the claim of the present invention in that the handover is induced from estimated interference, which is not a suitable basis for deciding when to perform a handover. However, the technique of using estimated interference for deciding a handoff or handover is conventionally well known in the art, which is taught by Royer in col. 1, lines 51-55 and col. 4, lines 20-37, in which the interference levels estimated between base stations' frequencies are used decide when to handover mobile units from one base station (serving cell) to adjacent base stations (adjacent cells). From this knowledge, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Royer to the handover of Fujii in order to provide suitable basis for deciding when to perform a handover to mobile units (col. 1, lines 51-55). Fujii as modified teaches the estimated interference on both the regular frequency and the super-reuse frequency, i.e., a serving cell and an adjacent cell, (estimating carrier-to-interference ratio at cellular base stations, col. 1, lines 51-53 of Royer).

Regarding claim 2, Fujii as modified fails to explicitly teach that 1) a handover from a regular frequency to super-reuse frequency occurs at a predetermined interference level on said super-reuse frequency, and 2) a

handover from a super-reuse frequency to a regular frequency occurs when there is too poor an interference level on said super-reuse frequency. This limitation can be summarized as 1) when the interference level of the regular channel 1out in the first small cell (fig. 16C of Fujii) is bad compared to the interference level of the super-reuse channel 1in in the third small cell, a handover occurs, and 2) when the interference level of the super-reuse channel 1in in the third small cell is bad compared to the interference level of the regular channel 1out in the first small cell, a handover is needed. Therefore, the claim is just an estimation between the interference levels of the channels of the first small cell and the third small cell for the purpose of deciding a handover. And this technique is addressed by Royer in col. 1, lines 51-56 and col. 4, lines 20-37 in which the interference levels estimated between base stations are used decide when to handover mobile units from one base station (serving cell) to adjacent base stations (adjacent cells), i.e., when to handover between the first small cell and the third small cell of Fujii. With this knowledge, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Royer to the handover of Fujii in order to provide suitable

basis for deciding when to perform a handover to mobile units (col. 1, lines 51-55).

Regarding claim 3, Fujii as modified also teaches that a radio frequency assigned in handover from another cell, i.e., inter cell handover, (adjacent first small cell, fig. 16C of Fujii) is a regular frequency (channel 2_{out} changes to channel 1_{out} when handover, fig. 16C of Fujii). Fujii as modified also teaches in another embodiment that a BCCH frequency (control channel) of the cell is a regular frequency (a control channel is common to a first small cell and a second small cell, col. 6, line 57 through col. 7, line 6, which is a regular frequency assigned to the larger first small cell, i.e., the cell). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide control channel with a regular frequency in order to improve spectrum efficiency (col. 7, lines 3-6).

Regarding claim 9, the claim is interpreted and rejected for the same reason as set forth in claim 1.

Regarding claim 10, the claim is interpreted and rejected for the same reason as set forth in claim 2.

Regarding claim 11, the claim is interpreted and rejected for the same reason as set forth in claim 3.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii in view of Royer as applied to claim 1 above, and further in view of Kallin et al. (U.S. 5,357,559).

Regarding claim 4, Fujii as modified also teaches that said controller controls traffic load distribution between regular cells (first small cells, fig. 16C of Fujii) and a microcell (third small cells, fig. 16C of Fujii) by intercell-handovers induced by an interference level in the microcell (from intercell handover as stated in the rejection of claim 3 and based on the interference level on the third small cell or microcell as stated in the rejection of claim 2, case 1). Fujii as modified also teaches that at least one microcell having only super-reuse frequencies (fig. 16A of Fujii, CONTROL-CHANNEL-TRXin, TRXin channels), one of said super-reuse frequencies, CONTROL-CHANNEL-TRXin, being a BCCH frequency as claimed. Fujii fails to teach that call set-up in the microcell is barred. The art of barring call set-up or call access in a microcell is conventionally well known, as taught by Kallin. Kallin teaches that only the macrocell (Fujii's first small cell) downlink control channel is responded to call access and the microcell (Fujii's third small cell) is barred from the call access (the system responds

to the call access only on the control channel of the umbrella cell or macrocell, col. 3, lines 10-35). With this knowledge, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Kallin to the cellular communication system of Fujii in order to avoid excessive rescanning (col. 3, lines 32-40).

4. Claims 5-6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii in view of Royer as applied to claim 1 above, and further in view of Bruckert (U.S. 5,038,399).

Regarding claim 5, Fujii as modified fails to teach MAHO (Mobile Assisted hand off) for providing measurement signal strength RSSI of base stations in order to obtain the estimated interference. The technique of using MAHO in order to obtain the estimated interference is conventionally well known in the art, as taught by Bruckert. Bruckert teaches that a subscriber unit measures the signal strength of a serving station (serving cell) and a signal strength of a neighboring stations (adjacent cells) and communicates these measurements to a switching center (handover controller) for estimating interference (col. 4, line 40 through col. 5, line 4). Based on this knowledge, it would have been obvious to one of ordinary

skill in the art at the time the invention was made to provide the teaching of Bruckert to the cellular communication system of Fujii in order to provide a more reliable carrier to interference C/I determination by which reuse levels are assigned to appropriate serving sites and subscribers are assigned to appropriate reuse levels (col. 2, lines 59-64).

Fujii as modified teaches the estimate of an interference level on said super-reuse frequencies of the serving cell as stated in the rejection of claim 1.

Regarding claim 6, Fujii as modified teaches one or more adjacent cells (first small cells, in fig. 16C of Fujii) have been assigned to each super-reuse frequency (channel 1in, fig. 16C of Fujii) of said serving cell (the left most first small cell, fig. 16C of Fujii). The limitation of said measured receiving level of said adjacent cell being used to estimate interference on said super-reuse frequency has been addressed in the rejection of claim 5.

Regarding claim 12, the claim is interpreted and rejected for the same reason as set forth in claim 5.

Regarding claim 13, the claim is interpreted and rejected for the same reason as set forth in claim 6.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE NGUYEN whose telephone number is (703)-308-5249. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, VIVIAN CHIN can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 3/29/04
LEE NGUYEN
Primary Examiner

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